

NEW



Series HSD38

- *Double-Sealed Housing*
- *High Resolution Unbreakable Disk*
- *Electrically and Thermally Isolated*
- *Industrial Duty Connector*
- *NEMA 4X, 6 / IP66, 67 Rated*
- *Rugged Cast-Aluminum Housing*
- *Two Year Warranty*

Extreme Heavy Duty Hollowshaft Encoder

DESCRIPTION

NorthStar's HSD38 Extreme Duty Industrial Hollowshaft Encoder accepts up to 1" diameter shafts and operates reliably from -40 to +100°C. Its Hard Anodized finish enclosure exceeds IP66/IP67 and NEMA 6 enclosure requirements.

This robust encoder features a double-sealed housing that allows application where regulatory washdown and high pressure steam or caustic chemicals are present. Utilization of an advanced Opto ASIC with innovative packaging techniques enables the encoder to operate in high shock and vibration environments.

APPLICATIONS:

The HSD38 extreme duty encoder features simple installation on motor or machine shafts. It is often mounted on the back of motors where encoder feedback is needed in harsh environment applications. It is ideal for use in environments that demand heavy washdown protection.

- *Converting Machinery*
- *Material Handling*
- *Packaging Equipment*
- *Processing Equipment*

INDUSTRIES

Chemical, Food & Beverage, Paper, Steel and any other where a precise encoder is needed to operate in harsh environments.

FEATURES/BENEFITS

Mechanical and Environmental

- *Unbreakable code disk*
- *Hollowshaft mounting*
- *Heavy duty shaft seals*
- *Sealed connector*

Electrical

- *Cast housing maximizes noise immunity and durability*



Extreme Heavy Duty Hollowshaft Encoder

Series HSD38

Extreme Heavy Duty... Meets Stringent Washdown Requirements

SPECIFICATIONS*

STANDARD OPERATING CHARACTERISTICS

Code: Incremental
Resolution: to 5000 PPR (pulses/revolution) See Ordering Information
Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs
Phase Sense: A leads B for CCW shaft rotation viewing the shaft clamp end of the encoder
Quadrature Phasing: 90° ± 15° electrical
Symmetry: 180° ± 18° electrical
Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

ELECTRICAL

Input Power: 5-26VDC. 50 mA max., not including output loads.
Outputs: ET7272, ET7273
Frequency Response: 125 kHz (data & index)
Termination: MS Connector; M12 Connector; cable exit w/seal. See Ordering Information
Mating Connector:
 6 pin MS, style MS3106A-14S-6S (MCN-N4);
 7 pin MS, style MS3106A-16S-1S (MCN-N5);
 10 pin MS, style MS3106A-18-1S (MCN-N6);
 Cable w/ 5 pin M12 connector, p/n 112859-xxx
 Cable w/ 8 pin M12 connector, p/n 112860-xxx

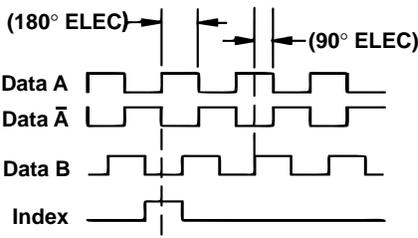
MECHANICAL

Shaft Material: 6061-T6 Aluminum
Bore Diameter: 1.00", 0.875", 0.750", 0.625", 0.500", 16mm, 15mm, 12mm. Insulated inserts provided for bores under 1 inch (1" bore not electrically isolated).
Bore runout: ±0.0005 TIR at midpoint
Min. Shaft Engagement: 1.25"
Starting torque: 4.0 in-oz. maximum (at 25°C)
Running torque: 3.0 in-oz. maximum (at ambient)
Bearings: 61806-ZZ
Bearing life: 5 x 10⁸ revs at rated shaft Loading, 5 x 10¹¹ revs at 10% of rated shaft loading. (manufacturers' specs)
Housing and cover: Hard Anodized Aluminum.
Disc material: Metal or mylar (unbreakable)
Weight: 26 ounces, typical

* Specifications are for base models with standard features only unless otherwise noted. Specifications subject to change without notice in accordance with our DBS policy of continuous improvement. All product and brand names are trademarks of their respective owners. All rights reserved.

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 NorthStar Brand HSD38 Data Sheet (10/06)

DATA AND INDEX Not all complements shown A shown for reference



A leads B, CCW (From Clamp End)

ENVIRONMENTAL

Operating Temperature: -40 to 100°C
Storage temperature: -40 to 100°C
Shock: 50G's for 11msec duration
Vibration: 5 to 2000Hz @ 20 G's
Humidity: 100%
Enclosure Rating: NEMA 4X, NEMA 6, IP66, IP67 (NEMA 6P upon request)

ELECTRICAL CONNECTIONS

6, 7 & 10 Pin MS Connectors and Cables

Connector & mate/accessory cable assembly pin numbers and wire color information is provided here for reference. HSD23 models with direct cable exit carry the color coding as shown in the right hand column.

Encoder Function	Cable # 108594-6 Pin Single Ended		Cable # 108595-7 Pin Single Ended		Cable # 108596-7 Pin Dif Line Drv w/o Idx		Cable # 1400635-10 Pin Dif Line Drv w/ Idx		Cable Exit with Seal Wire Color
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	
Sig. A	E	BRN	A	BRN	A	BRN	A	BRN	GREEN
Sig. B	D	ORN	B	ORG	B	ORG	B	ORG	BLUE
Sig. Z	C	YEL	C	YEL	—	—	C	YEL	ORANGE
Power +V	B	RED	D	RED	D	RED	D	RED	RED
Com	A	BLK	F	BLK	F	BLK	F	BLK	BLACK
Case	—	—	G	GRN	G	GRN	G	GRN	WHITE
N/C	F	—	E	—	—	—	E	—	—
Sig. A-bar	—	—	—	—	C	BRN/WHT	H	BRN/WHT	VIOLET
Sig. B-bar	—	—	—	—	E	ORG/WHT	I	ORG/WHT	BROWN
Sig. Z-bar	—	—	—	—	—	—	J	YEL/WHT	YELLOW

5 & 8 Pin M12 Accessory Cables when Code 8= N to R

Connector pin numbers and cable assembly wire color information is provided here for reference.

Encoder Function	Cable # 112859-5 Pin Single Ended		Cable # 112860-8 Pin Single Ended		Cable # 112860-8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
*Sig. Z	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig. A-bar	—	—	—	—	3	BRN/WHT
Sig. B-bar	—	—	—	—	5	ORG/WHT
*Sig. Z-bar	—	—	—	—	8	YEL/WHT

* Index not provided on all models. See ordering information
 Cable Configuration: PVC jacket, 105 °C rated, overall foil shield; 24 AWG conductors, minimum

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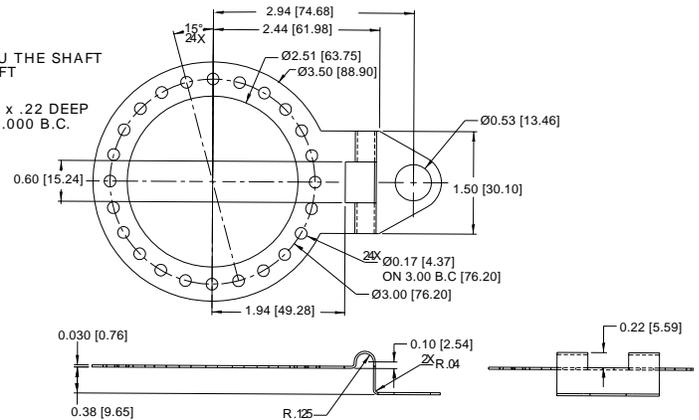
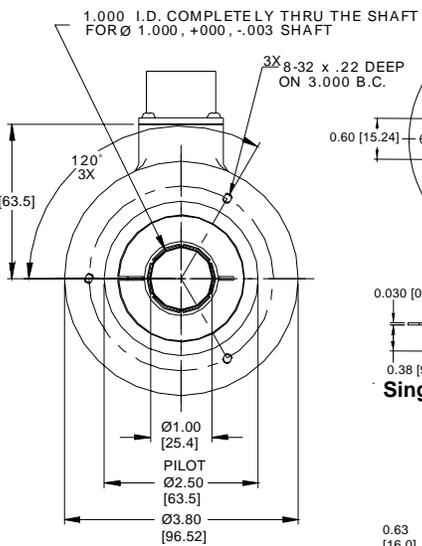
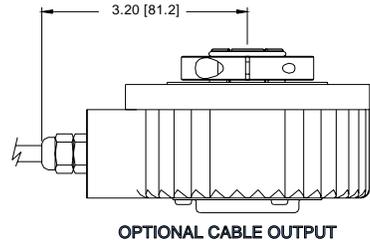
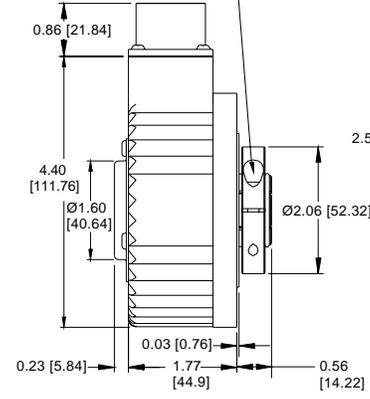
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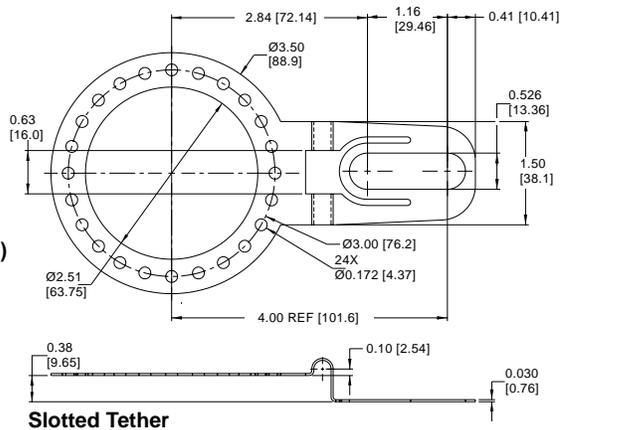
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DIMENSIONS

10-32 CLAMP SCREW
TORQUE TO 50 - 55 IN/LBS
WITH LOCTITE ON THREADS



Single Point Tether



Slotted Tether

ORDERING INFORMATION

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Format	Code 5: Output	Code 6: Termination	Code 7:	Code 8: Housing
HSD38	□□□□	□	□	□	□	0	□

Ordering Information							
HSD38 Size 38 extreme heavy-duty, hollowshaft encoder	0015	6 12mm	0 single ended, unidirectional (A)	0 5-26V in, 5-26V Open Collector out (7273)	0 6 pin connector	Reserved for Future Options	0 Cast Aluminum Housing, Slotted Tether Included
	0032	9 15 mm	1 single ended, bidirectional (AB)	2 5-26V in, 5-26V Push-Pull out	1 7 pin connector		6 Cast Aluminum Housing, No Tether
	0100	7 1/2"	2 single ended, bidirectional with index (ABZ)	available when: Code 4 is 3 or 4	2 10 pin connector		C Cast Aluminum Housing, Single-Point Tether Included (NEMA 4.5" C-face)
	0200	8 5/8"	available when Code 5 is 3 or 4:	3 5-26V in, 5-26V Differential Line Driver out (7272)	5 6 pin connector, plus mating connector		
	0240	A 16mm	3 differential, bidirectional (A \bar{A} B \bar{B})	4 5-26V in, 5V Differential Line Driver out (7272)	6 7 pin connector, plus mating connector		
	0250	C 3/4"	available when Code 5 is 3 or 4 and Code 6 is 2, 7, A, G, J or K		7 10 pin connector, plus mating connector		
	0500	E 7/8"	4 differential, bidirectional with index (A \bar{A} B \bar{B} Z \bar{Z})		A 18" (.5m) cable		
	0512	not electrically isolated			G 13" (.3m) cable		
	0600	G 1"			J 8 pin M12 connector		
	1000				K 18" (.5m) cable with 10 pin in-line connector		
	1024				available when: Code 5 is 0 or 2		
	1200				H 5 pin M12 connector		
	2000						
	2048						
	2500						
	4000						
	5000						

Accessory Kits:

- 113304-0001, Single Point Tether Kit, Includes Tether and attaching parts.
- 113305-0001, Slotted Tether Kit, Includes Tether and attaching parts.
- 113310-0001, Bore Insert Kit, assortment of adapters allowing accomodation of all shaft sizes shown above in code 3

Worldwide Brands:

Dynapar™

Eagle Signal™

Harowe™

Hengstler™

NorthStar™

Veeder-Root™



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Danaher, a
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company with
offices in 30
countries around
the world.**

More Available. With factories around the world, global sales and applications support, and an expansive network of distributors, we stay close to our customers - shortening lead times and fostering responsiveness. Three-day lead time is standard, with same-day shipments available on many of our products.

More Selection. We have a broad selection of controllers to meet application requirements in a variety of industries. User-configurable, accurate and flexible, with low, mid, or high level performance ranges, our controller products meet your system and budgetary requirements.

More Reliable. Our experience with more than 25,000 customers has taught us to design controllers that are reliable and durable, with quality standards that meet six sigma requirements.

For additional information or a full-line catalog, contact DICG Customer Service or visit our web site.

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NorthStar brand HSD38 Data Sheet (1006)

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